

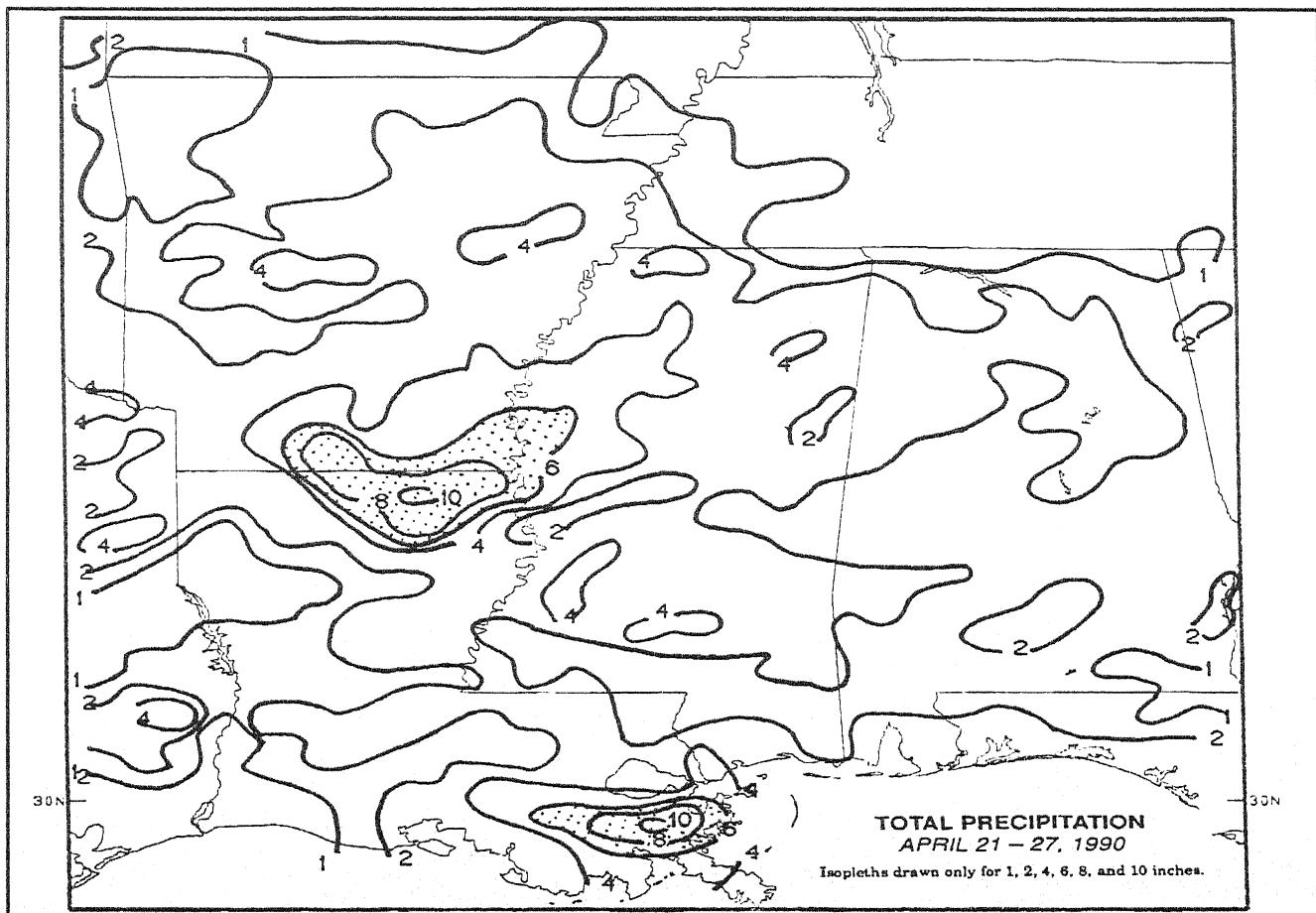
CONTAINS:
BRIEF
SUMMARY
OF
EUROPEAN
COLD
SNAP

WEEKLY CLIMATE BULLETIN

No. 91/17

Washington, DC

April 27, 1991



Intense thunderstorms deluged the lower Mississippi Valley again last week, causing severe flooding, while violent storms spawned a series of deadly tornadoes farther northwest across the central and southern Great Plains. Up to 10.6 inches of rain fell in northeastern Louisiana on soils already saturated from heavy rains during the previous two weeks (see United States Weekly Climate Summary for more details). Parts of southeastern Louisiana were also pelted by more than 10 inches of rain as the New Orleans Naval Air Station measured 8.2 inches of rain from thunderstorms on the 25th and 26th. The recurrent cloudbursts have delayed cotton planting for at least two weeks and prompted President Bush to declare a major disaster in Louisiana.



UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE-NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER



WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- *Highlights of major climatic events and anomalies.*
- *U.S. climatic conditions for the previous week.*
- *U.S. apparent temperatures (summer) or wind chill (winter).*
- *U.S. cooling degree days (summer) or heating degree days (winter).*
- *Global two-week temperature anomalies.*
- *Global four-week precipitation anomalies.*
- *Global monthly temperature and precipitation anomalies.*
- *Global three-month precipitation anomalies (once a month).*
- *Global twelve-month precipitation anomalies (every three months).*
- *Global three-month temperature anomalies for winter and summer seasons.*
- *Special climate summaries, explanations, etc. (as appropriate).*

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF APRIL 27, 1991

Central United States:

TORNADOES, TORRENTIAL RAIN, AND SEVERE FLOODS RAVAGE REGION.

Intense thunderstorms spawned more than seventy tornadoes in the central and southern Plains, producing widespread damage. Deadly tornadoes swept through the Wichita, KS area with more than one dozen individuals losing their lives in Andover, just east of Wichita. In addition cloudbursts inundated the lower Mississippi Valley, causing severe flooding. President Bush declared a major disaster in Louisiana where as up to 265 mm deluged New Orleans. Heavy rains also soaked much of the Southeast and portions of the middle Mississippi Valley (see Front Cover for more details) [5 weeks].

East-Central South America:

MORE HEAVY RAINS.

Bountiful rains again soaked Brazil's Rio Grande Do Sul, Uruguay, and portions of northeastern Argentina. A number of stations reported weekly precipitation in excess of 100 mm [3 weeks].

Ireland and Scotland:

WET WEATHER ENDS.

Following a week with little or no precipitation, showers brought only scattered light to moderate rains to the British Isles, eliminating significant moisture surpluses [Ended after 4 weeks].

Western Europe:

COLD WAVE BLASTS REGION.

Temperatures as low as -7°C, coupled with snow and hail in some areas, killed many of the buds on flowering grapevines. The cold wave was damaging because it followed an unusually early warm spell which allowed many vines to sprout grapes early, rendering them very vulnerable. In the Bordeaux, Medoc, and white wine Sauternes regions of France, according to press reports some vineyards had 80-100 percent of the young crop ruined [2 weeks].

5. Southeastern Europe:

LATE-SEASON RAINS.

Abnormally heavy rains have covered southeastern Europe during the past few weeks, generating short-term moisture surpluses. In Yugoslavia where the wet season would normally be winding down, 40-80 mm was reported last week [3 weeks].

6. Southeastern Africa:

WET SEASON ENDS EARLY.

Warm, dry weather again prevailed in southern Africa, bringing an early start to the dry season [4 weeks].

7. Japan and East-Central China:

INCESSANT MODERATE TO HEAVY RAINS.

Heavy rains continue to plague Japan where 100-300 mm inundated portions of Shikoku and southern Honshu. Fortunately, precipitation slackened across much of affected China, providing some relief from the current wet spell [11 weeks].

8. Southern China and Taiwan:

DRIER WEATHER REPORTED.

For the third consecutive week, only light precipitation fell across southern China. In Taiwan, the deficient precipitation dates back to mid-February [3 weeks].

9. The Philippines:

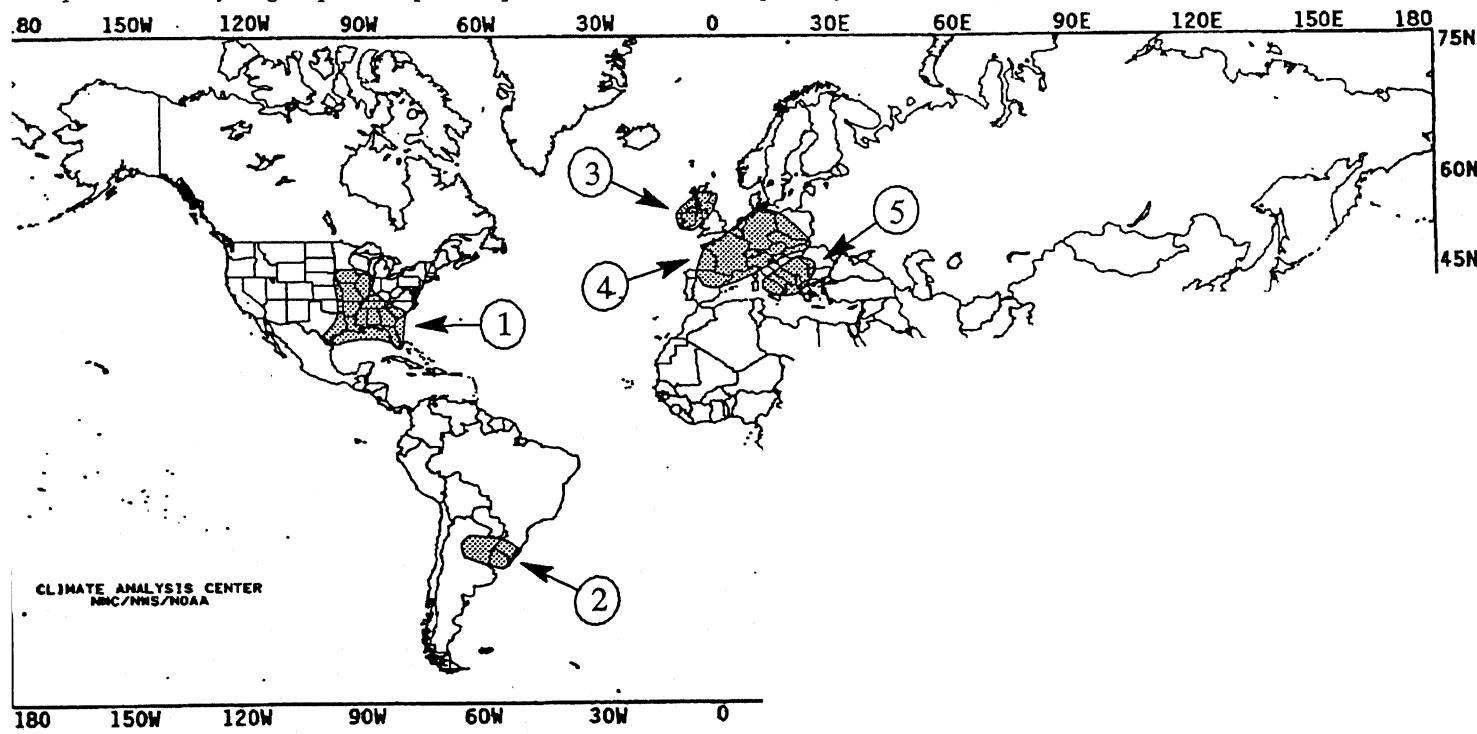
MODERATE RAINFALL PROVIDES RELIEF.

Weak Tropical Storm Vanessa trekked through the islands, bringing a second consecutive week of moderate rains (30-80 mm) and easing the prolonged dry spell over much of the southern Philippines [Ending after 21 weeks].

10. Northern and Eastern Australia and Papua New Guinea:

A WET WEEK DECREASES MOISTURE DEFICITS.

The heaviest rains (> 100 mm) in several months relieved dryness in Papua New Guinea and the Solomon Islands. Dry weather however, continued in northeastern Australia south of the Cape York Peninsula [Ending after 10 weeks].



EXPLANATION

EXT: Approximate duration of anomalies is in brackets. Precipitation and

MAP: Approximate locations of major anomalies and episodic events are temperature anomalies, four-week precipitation anomalies, long-

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF APRIL 21-27, 1991

Violent thunderstorms, packing heavy rain, softball-size hail, and numerous tornadoes raked parts of the Great Plains and Deep South. Up to 70 tornadoes were reported on Friday, taking more than two dozen lives and causing widespread property damage from Texas to Iowa. Andover, KS was severely hit by one tornado that took over a dozen lives and injured dozens more when it flattened a mobile home park. According to press reports, hundreds of homes were damaged and/or destroyed along with as many as 11 businesses, leaving 1500 people homeless. In addition, thunderstorms over the Deep South produced heavy rain, strong winds and a few tornadoes which caused damage to numerous trees and power lines in Alabama. Up to 10.6 inches of rain fell on parts of Louisiana, flooding and closing several roads. Elsewhere, heavy rains and strong winds battered the Northeast, damaging several homes in eastern New Hampshire while flooding rivers and streams in parts of Maine and New York. Farther west, wintry conditions continued to grip parts of the Rockies and Intermountain West. Heavy snow and high winds produced a weather scenario more reflective of January in portions of the northern and central Rockies. Up to 18 inches of snow blanketed Victor, ID while nearly a foot piled-up in the mountains of Colorado and northern Utah. In contrast, unusually mild weather persisted across much of Alaska again this week as highs soared into the fifties at many locations.

The week began with a powerful storm system along the Atlantic Coast which spread heavy rains across much of New England on Sunday, causing flooding in parts of New York. Meanwhile, heavy rain and melting snow pushed some rivers and streams out of their banks in Maine. Unseasonably cold conditions settled into portions of the mid-Atlantic, producing a wintry mixture of ice and snow in the western panhandle of Maryland. Farther south, a low in eastern Texas spawned numerous thunderstorms over the lower Mississippi Valley as it tracked eastward. The low eventually moved into northern Florida, generating thunderstorms that dumped heavy rain on many locations. Orlando, FL measured nearly 3.5" of rain in a six hour period on Tuesday as strong wind gusts felled trees and power lines in northern Florida. Record warmth covered the southern portion of the state where highs soared into the nineties. In sharp contrast, snow blanketed parts of the upper Midwest as a cold front raced eastward toward the Great Lakes.

During the last half of the week, the cold front in the upper Midwest moved eastward and eventually off the Atlantic seaboard, but not before spreading additional rains across New England. Farther west, rain fell from northern California to Washington while snow piled up in the mountains as a cold front pushed inland. A secondary area of low pressure developed and intensified along the front as it moved through the Great Basin, dumping snow from parts of Montana to eastern California with the heaviest snow falling on the northern and central Rockies. Strong winds caused blowing and drifting snow and provided a winter-like chill for parts of Wyoming. Farther east, a warm, moist flow of air streamed northward across the

Plains. As the low tracked into the Plains, violent thunderstorms exploded, causing several deaths, numerous injuries and extensive damage especially in Oklahoma and Kansas. The severe weather spread into the Deep South as the storm system continued to track eastward. Thunderstorms generated strong wind gusts that caused property damage in parts of Alabama on Saturday. Tornadoes were sighted from Louisiana to Alabama. Nearly four inches of rain accompanied storms that moved through parts of South Carolina, causing some localized flooding. Meanwhile, wintry conditions persisted across parts of the Rockies and Black Hills. Snow fell from the Great Basin to portions of the northern High Plains while parts of the Rockies observed record lows into the single digits. In sharp contrast, unseasonably warm conditions prevailed over southern Florida as highs soared to 90°F at a number of locations.

According to the River Forecast Centers, the greatest weekly totals (more than 2 inches) fell across the south-central Plains, the lower Mississippi Valley, the Deep South, northern and central Florida, the northern half of New England, central Iowa, the central Rockies, and at a few scattered locations in the Pacific Northwest and southern Alaska (see Table 1). Much of the lower Mississippi Valley and Deep South have now experienced three successive weeks of excessive rainfall (see Figure 1). In contrast, light to moderate amounts were measured across southern New England, the Atlantic Coastal Plain, south-central Florida, the Great Lakes, portions of the Midwest and northern Plains, the middle Mississippi Valley, the remainder of the central Rockies, northern California, western sections of Washington and Oregon, and portions of southern Alaska and eastern Hawaii. Little or no precipitation fell on the mid-Atlantic, the Ohio Valley, southern Florida, the southwestern two-thirds of Texas, the northern and southern Rockies, the Southwest, the Intermountain West, the Far West, and the remainders of Alaska and Hawaii.

Unseasonably warm weather prevailed across the northern tier of states from eastern Washington to northern Maine and across most of Texas and Florida. Weekly departures between +3°F and +6°F were common from the northern Rockies to the north Atlantic Coast (see Table 2). Departures up to +6°F were also observed across the southernmost sections of Texas and at a few locations in southern Florida. Unusually mild weather also persisted across most of Alaska, with weekly departures up to +11°F recorded in the northernmost locations. Near to slightly above normal temperatures were observed along the extreme West Coast, south-central Arizona, and most of Hawaii.

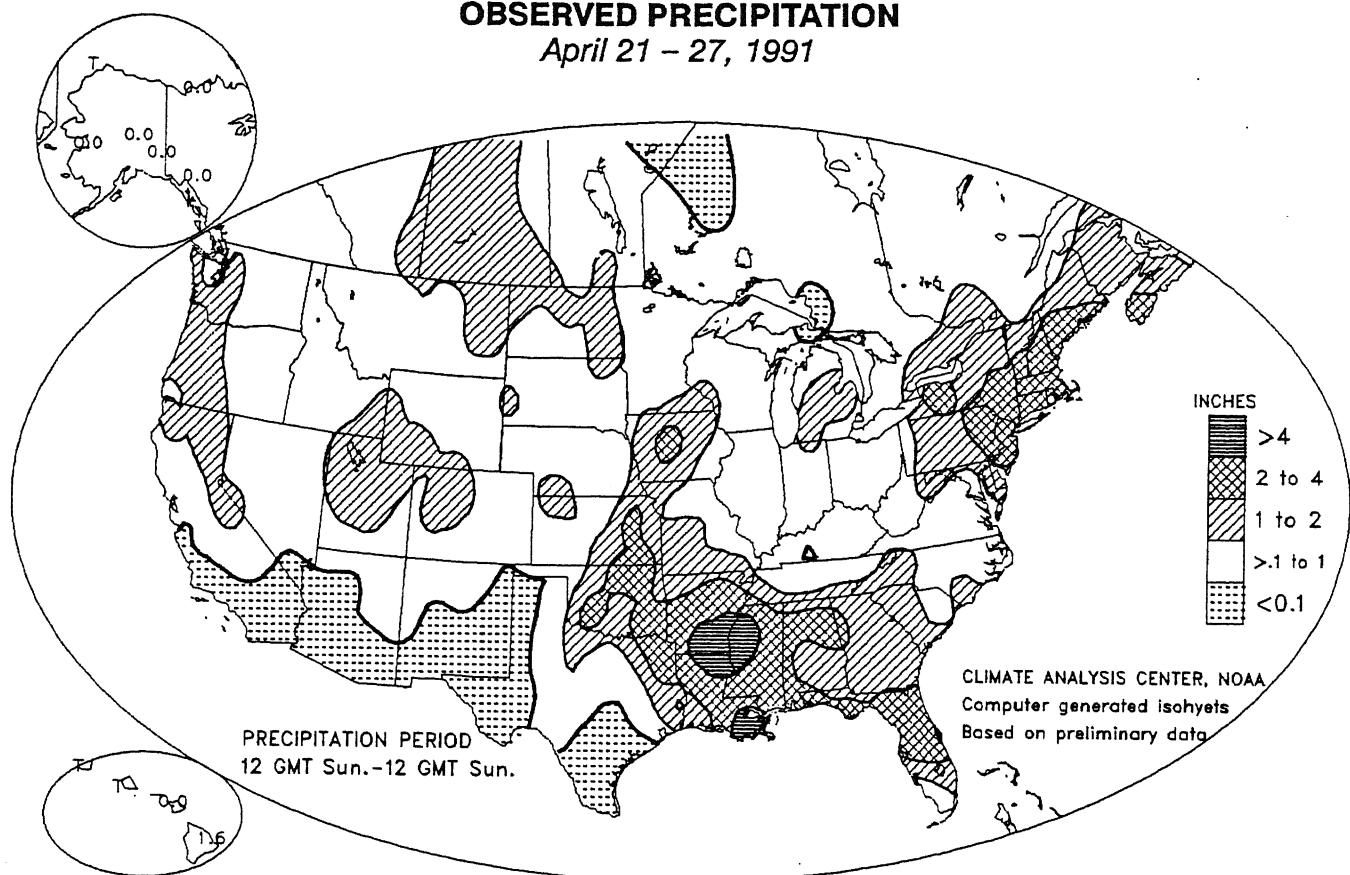
In sharp contrast, unseasonably cold conditions prevailed in an east to west band across the central two-thirds of the country (see Table 3). Weekly departures down to -5°F were recorded across the southern Appalachians and departures of -5°F to -8°F were observed from the central Rockies to the Cascades. Temperatures averaged 2°F and 4°F below normal across the remainder of the central U.S. from eastern California to the mid-Atlantic Coast.

TABLE 1. Selected stations with 2.50 or more inches of precipitation for the week of April 21 - 27, 1991.

STATION	PCP TOTAL (IN)	STATION	PCP TOTAL (IN)
NEW ORLEANS NAS, LA	8.15	MOBILE, AL	3.07
NEW ORLEANS/MOISANT, LA	5.26	JACKSON, MS	2.94
PORRTLAND, ME	4.55	ALTUS AFB, OK	2.86
MELBOURNE, FL	4.41	WORCESTER, MA	2.83
MILTON/WHITING NAS, FL	4.26	APALACHICOLA, FL	2.80
ORLANDO, FL	4.20	VALPARAISO/EGLIN AFB, FL	2.74
NEW ORLEANS/LAKEFRONT, LA	4.01	MONROE, LA	2.73
FALMOUTH/OTIS AFB, MA	3.99	YAKUTAT, AK	2.70
PONCA CITY, OK	3.46	JACKSONVILLE, FL	2.65
BRUNSWICK NAS, ME	3.38	NEWARK, NJ	2.62
BOSTON, MA	3.35	PENSACOLA, FL	2.60
PORTSMOUTH/PEASE AFB, NH	3.31	BUFFALO, NY	2.58
LITTLE ROCK, AR	3.16	POUGHKEEPSIE, NY	2.55
PROVIDENCE, RI	3.10		

OBSERVED PRECIPITATION

April 21 - 27, 1991



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL ($^{\circ}$ F)

April 21 - 27, 1991

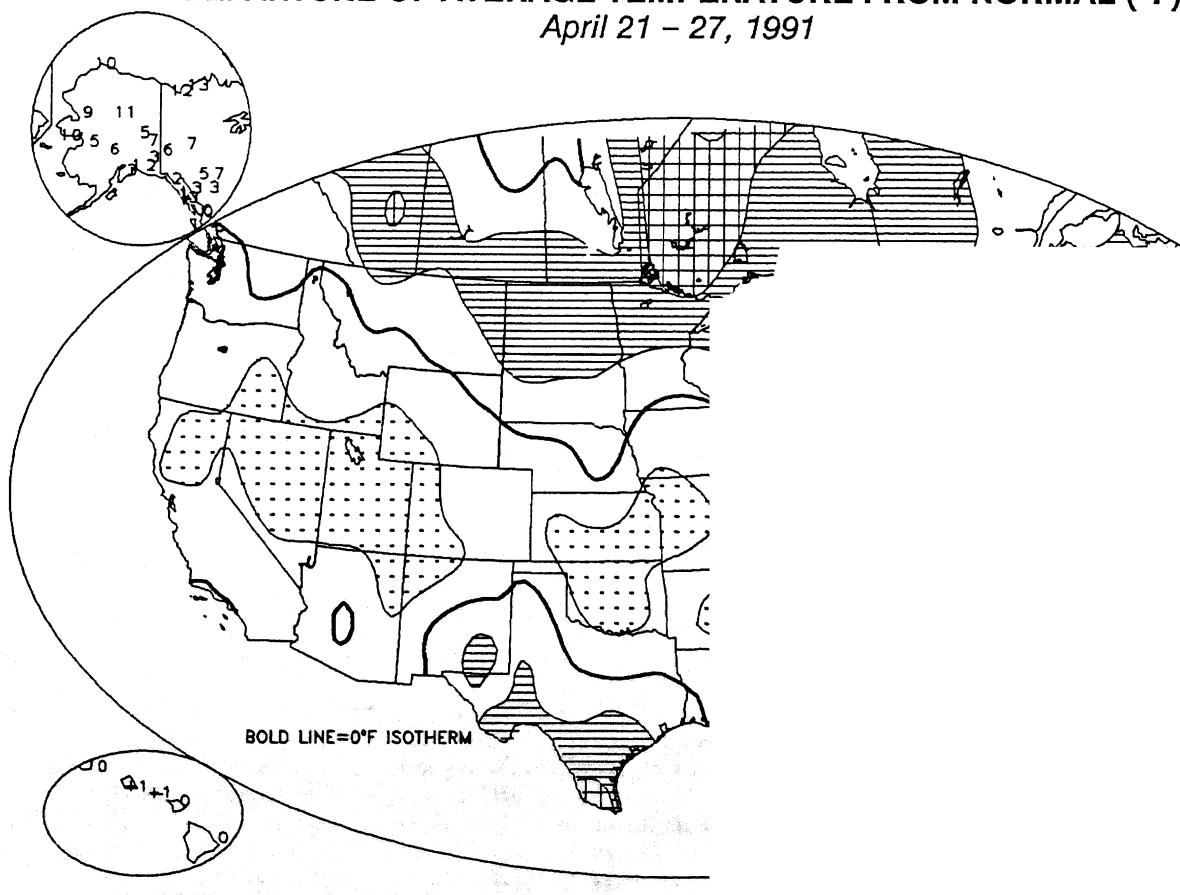


TABLE 2. Selected stations with temperatures averaging 5.0°F or more ABOVE normal for the week of April 21 – 27, 1991.

STATION	AVG(°F)	DEP(°F)	STATION	AVG(°F)	DEP(°F)
BETTLES, AK	40.3	+ 11.5	FT LAUDERDALE, FL	81.9	+ 6.3
BARROW, AK	14.7	+ 10.8	RUMFORD, ME	50.4	+ 6.1
NOME, AK	33.0	+ 10.5	INTERNATIONAL FALLS, MN	48.8	+ 6.1
BETHEL, AK	37.6	+ 9.4	BEEVILLE NAS, TX	78.6	+ 5.8
KOTZEBUE, AK	27.0	+ 9.3	FAIRBANKS, AK	41.9	+ 5.4
MCALENN, TX	85.3	+ 8.5	KINGSVILLE NAS, TX	79.9	+ 5.3
BIG DELTA, AK	43.9	+ 7.7	KING SALMON, AK	40.1	+ 5.3
HANCOCK, MI	47.6	+ 6.6	SAULT STE. MARIE, MI	47.2	+ 5.2
NORTHWAY, AK	40.1	+ 6.5	DICKINSON, ND	50.2	+ 5.1
MCGRATH, AK	39.2	+ 6.5	BROWNSVILLE, TX	81.4	+ 5.0

TABLE 3. Selected stations with temperatures averaging 4.0°F or more BELOW normal for the week of April 21 – 27, 1991.

STATION	AVG(°F)	DEP(°F)	STATION	AVG(°F)	DEP(°F)
OGDEN/HILL AFB, UT	44.7	-7.6	ASHEVILLE, NC	53.9	-4.5
ELY, NV	36.9	-6.6	CEDAR CITY, UT	45.0	-4.4
REDDING, CA	56.1	-6.2	SALT LAKE CITY, UT	47.1	-4.4
CALIENTE, NV	47.8	-5.6	ROANOKE, VA	54.7	-4.4
GRAND JUNCTION, CO	48.7	-5.6	GOLDSBORO/JOHNSON AFB, NC	59.5	-4.4
GREENVILLE, SC	57.9	-5.5	LOVELOCK, NV	46.6	-4.3
KANSAS CITY, MO	54.2	-5.2	WICHITA, KS	55.2	-4.2
ROME, GA	58.6	-5.2	ANDERSON, SC	60.1	-4.2
BLUE CANYON, CA	40.3	-5.1	BAKERSFIELD, CA	60.3	-4.2
HICKORY, NC	55.9	-5.1	SEXTON SUMMIT, OR	39.7	-4.1
ROCK SPRINGS, WY	38.0	-4.8	BLANDING, UT	46.0	-4.1
FARMINGTON, NM	49.2	-4.8	MARYSVILLE, CA	57.7	-4.1
BURNS, OR	41.0	-4.5	POPLAR BLUFF, MO	58.1	-4.0

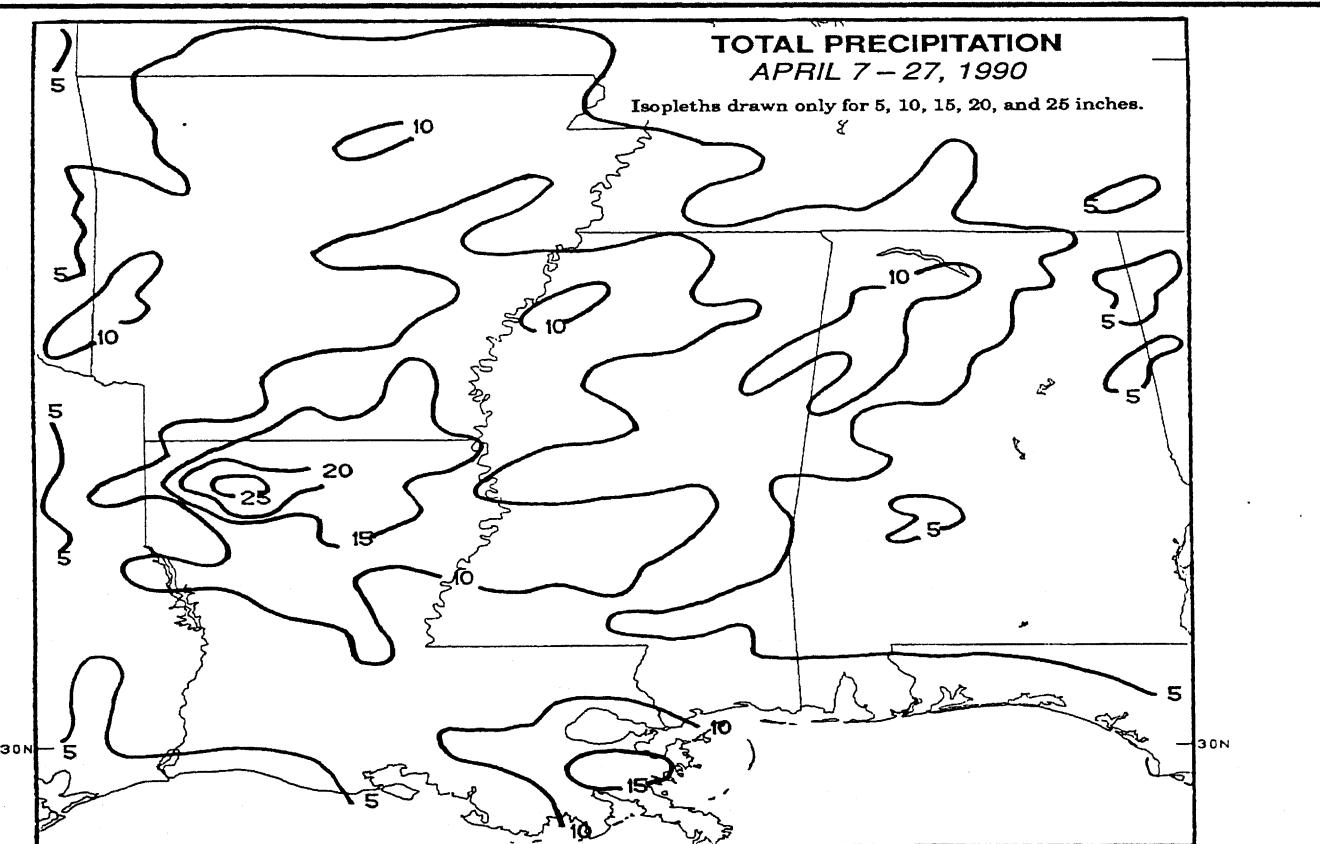
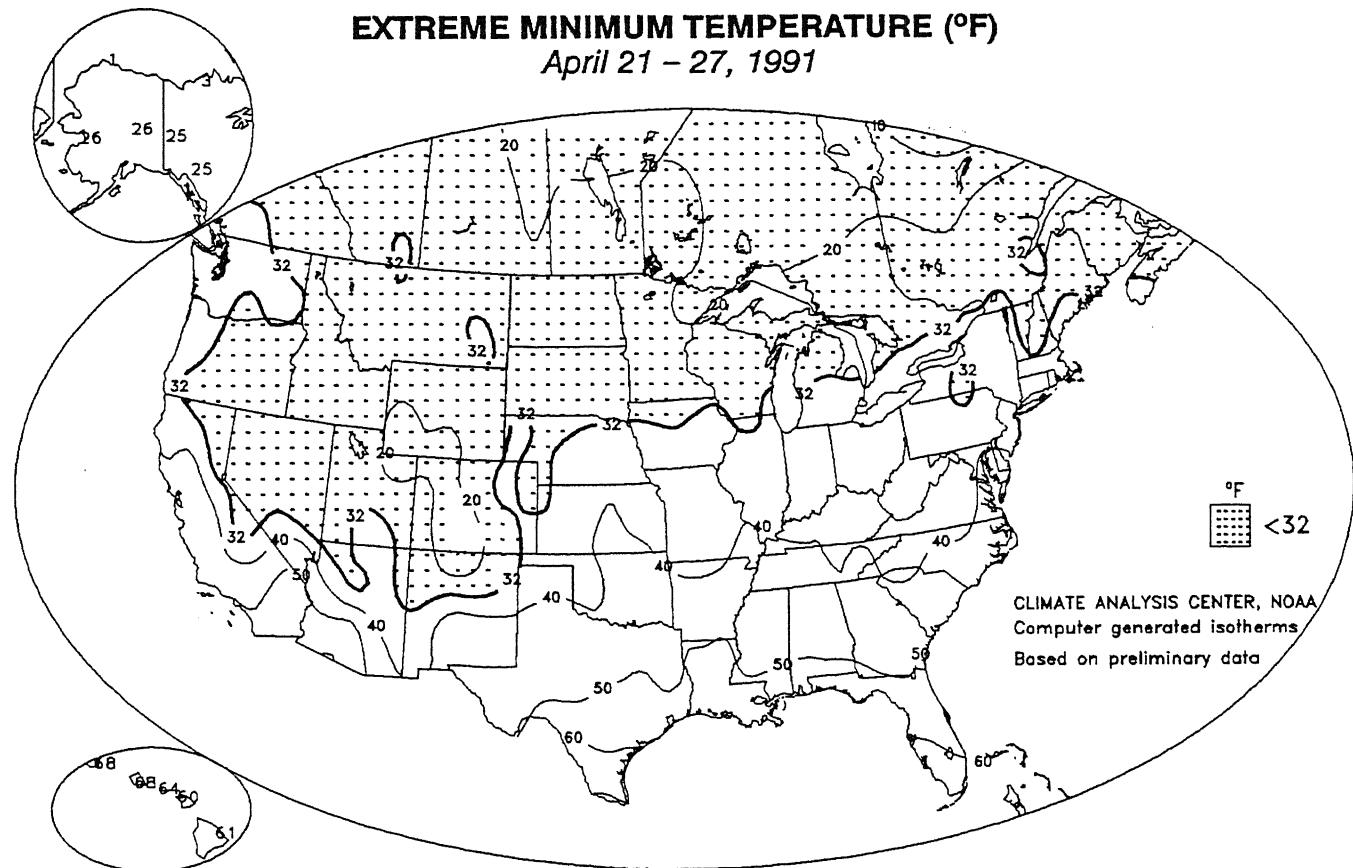


Figure 1. Total Precipitation Across the Lower Mississippi Valley, April 7 – 27, 1991. Isopleths drawn only for 5, 10, 15, 20, and 25 inches. Excessive precipitation has inundated the region during the past three weeks, bringing severe widespread flooding to many areas, particularly in northern and southeastern Louisiana, and establishing new total precipitation records for the month of April at some locations. Shreveport broke the previous April MONTHLY record on April 14 and is approaching its all-time single month record of 25.45 inches established in July 1933. Wallace and Cross Lakes have both set record high crests near or slightly above their respective spillways.

EXTREME MINIMUM TEMPERATURE (°F)

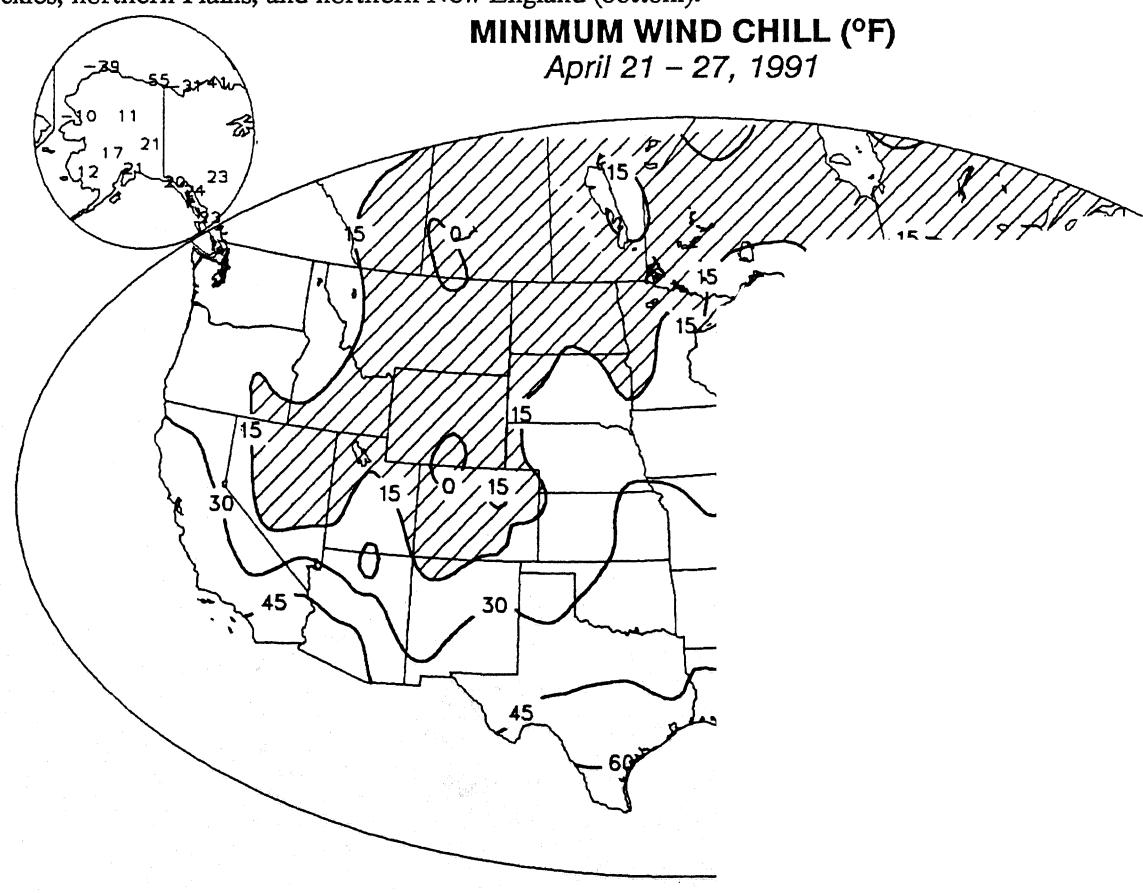
April 21 – 27, 1991



Most of the eastern half of the nation again remained above freezing while colder air infiltrated into the central and northern Plains, Rockies, and the Intermountain West as temperatures dipped below 20°F in portions of the central and southern Rockies (top). Gusty northerly winds brought relatively low wind chills (< 15°F) to parts of the Great Basin, central and northern Rockies, northern Plains, and northern New England (bottom).

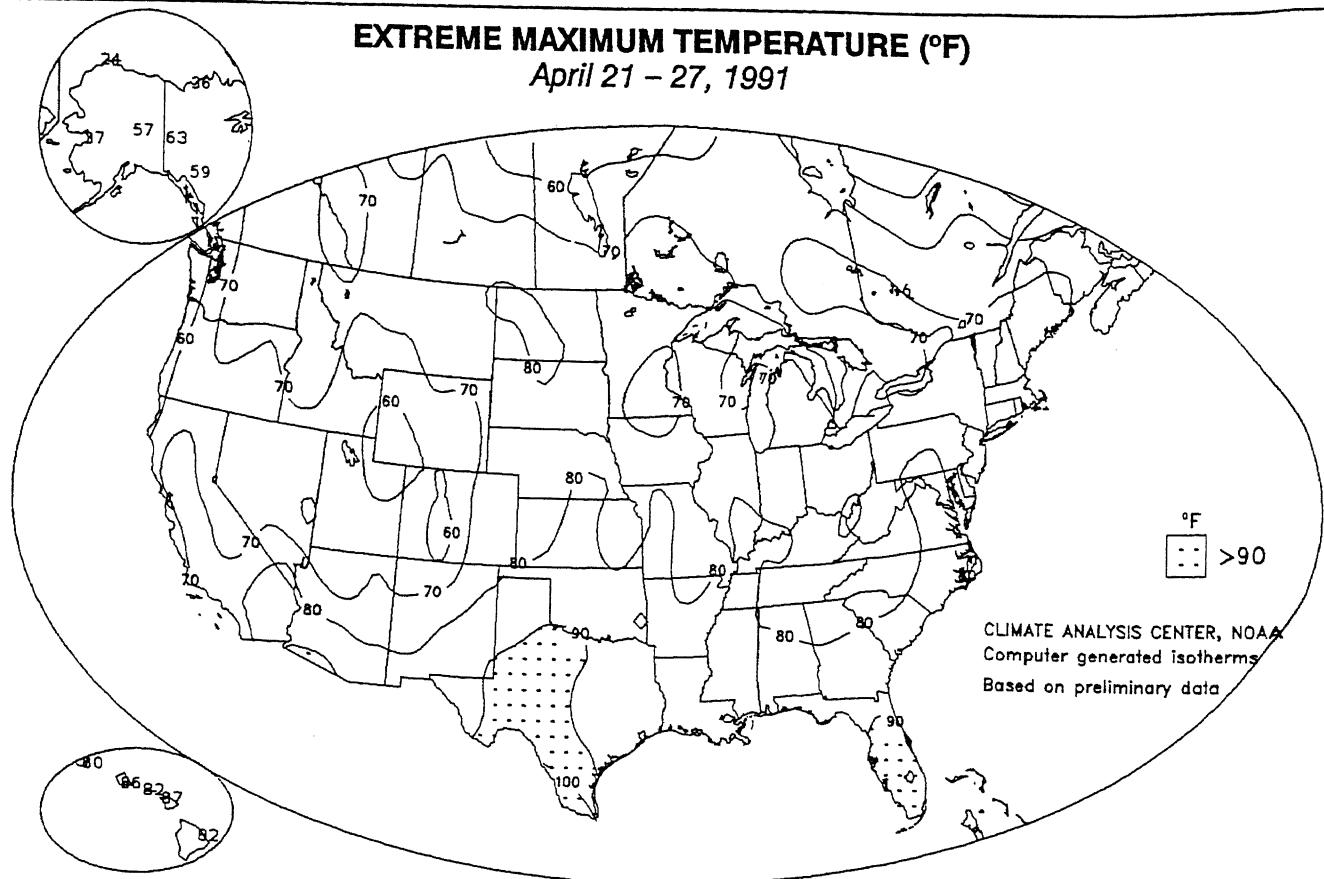
MINIMUM WIND CHILL (°F)

April 21 – 27, 1991



EXTREME MAXIMUM TEMPERATURE (°F)

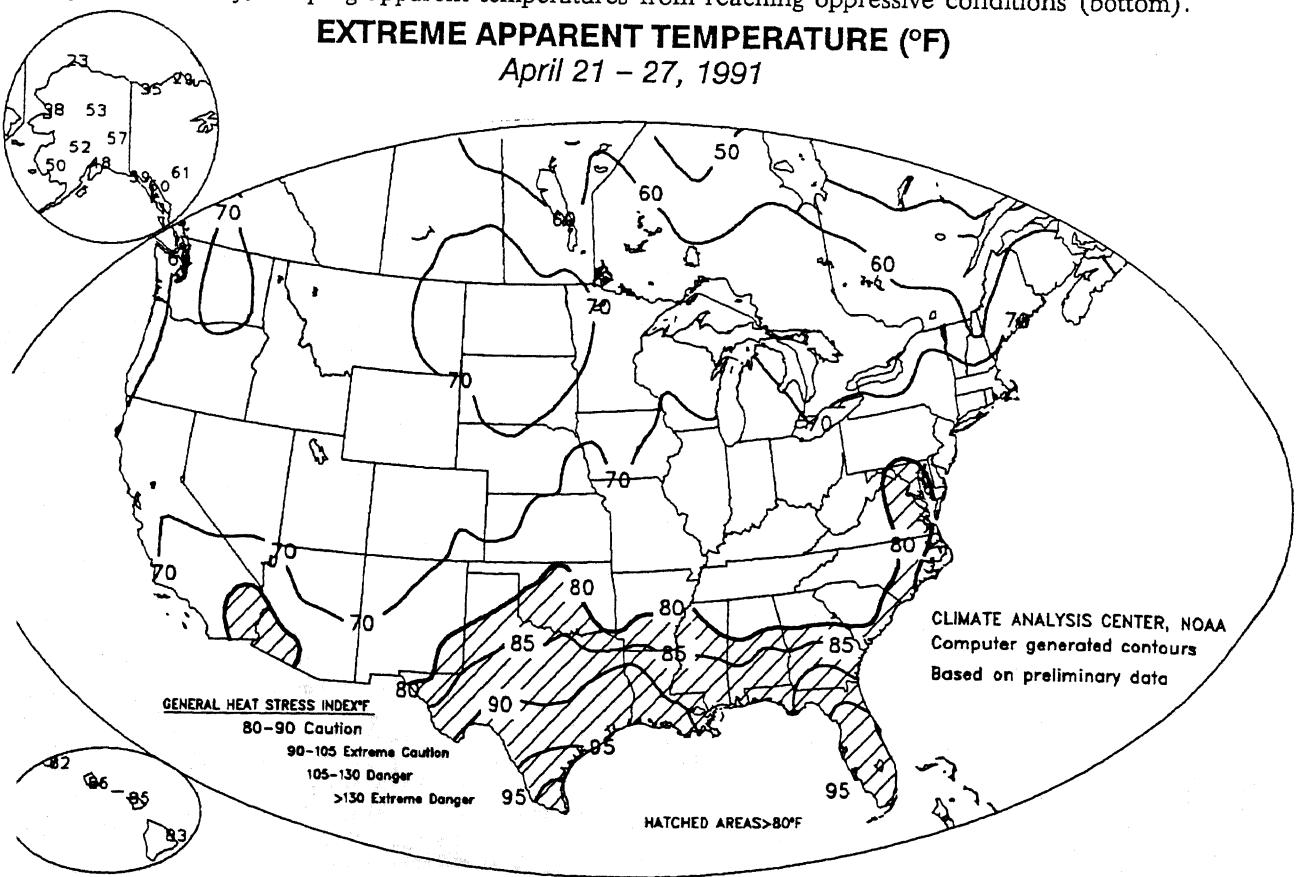
April 21 – 27, 1991



High temperatures reached the nineties during the week in portions of the southern Plains and Florida, with 80°F+ readings reported as far north as the northern Great Plains (top). The warmth across the South was again accompanied by relatively low humidity, keeping apparent temperatures from reaching oppressive conditions (bottom).

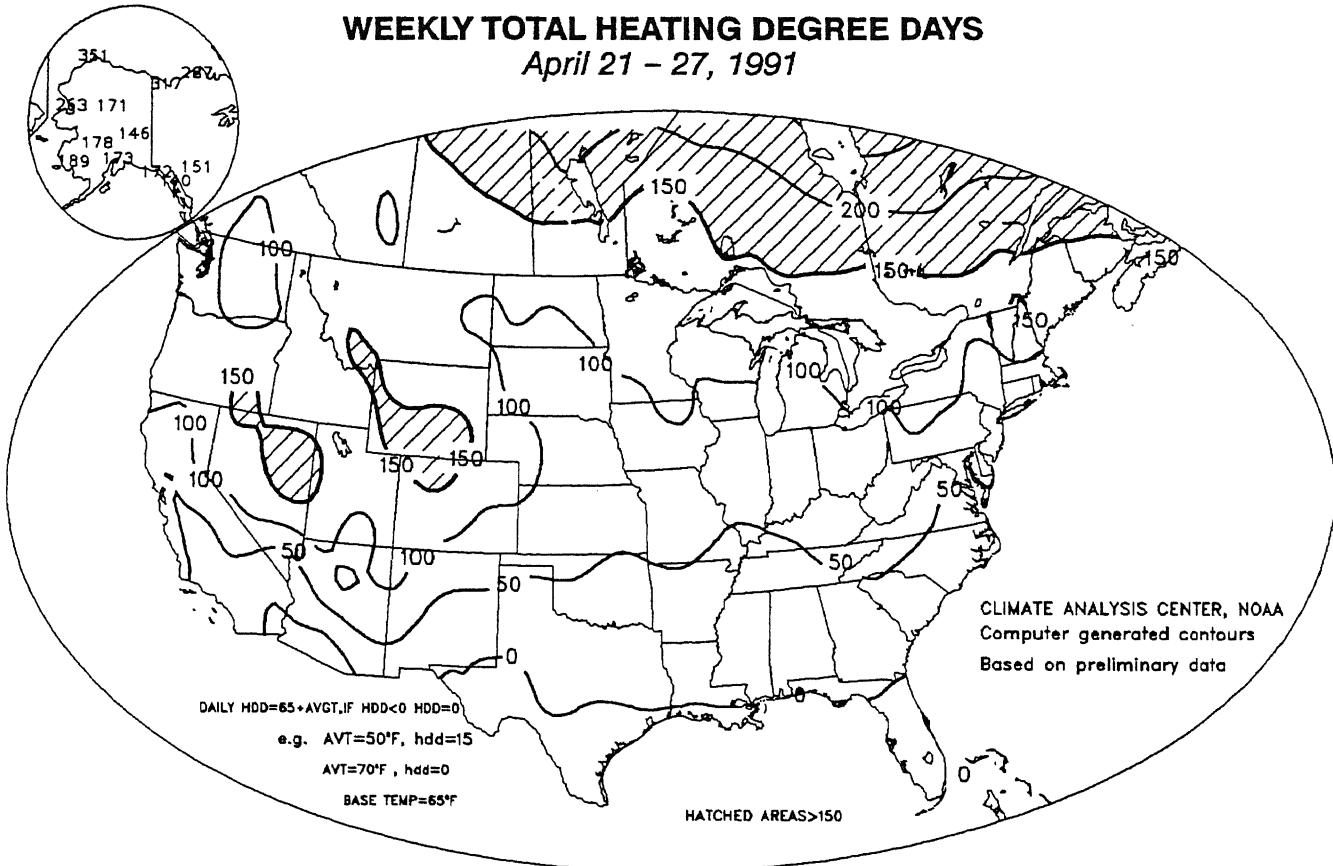
EXTREME APPARENT TEMPERATURE (°F)

April 21 – 27, 1991



WEEKLY TOTAL HEATING DEGREE DAYS

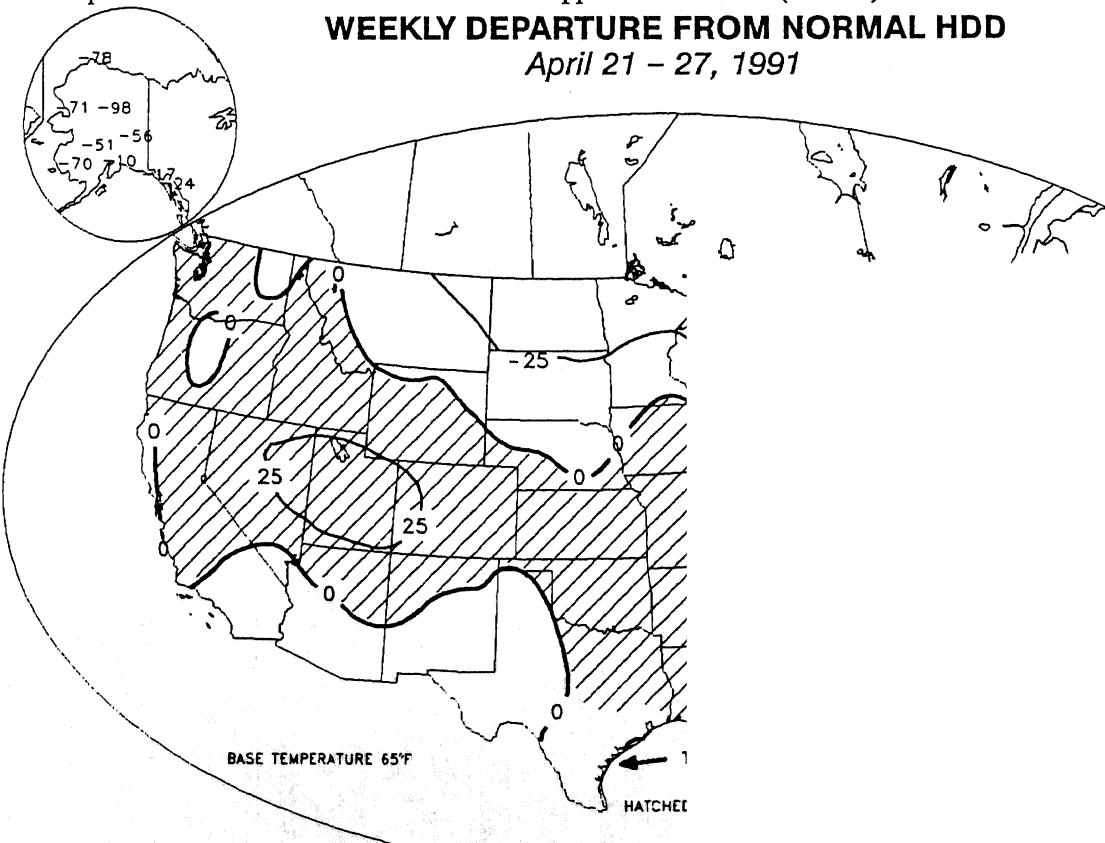
April 21 – 27, 1991



The week marked a continued decrease in heating demand across the nation, with moderate usage (> 150 HDD's) restricted to the higher elevations of the Rockies and Intermountain West (top). Slight departures from normal heating usage were found across most of the country, with more significant positive departures in the central Rockies and Intermountain West and negative departures across the northern Plains and upper Great Lakes (bottom).

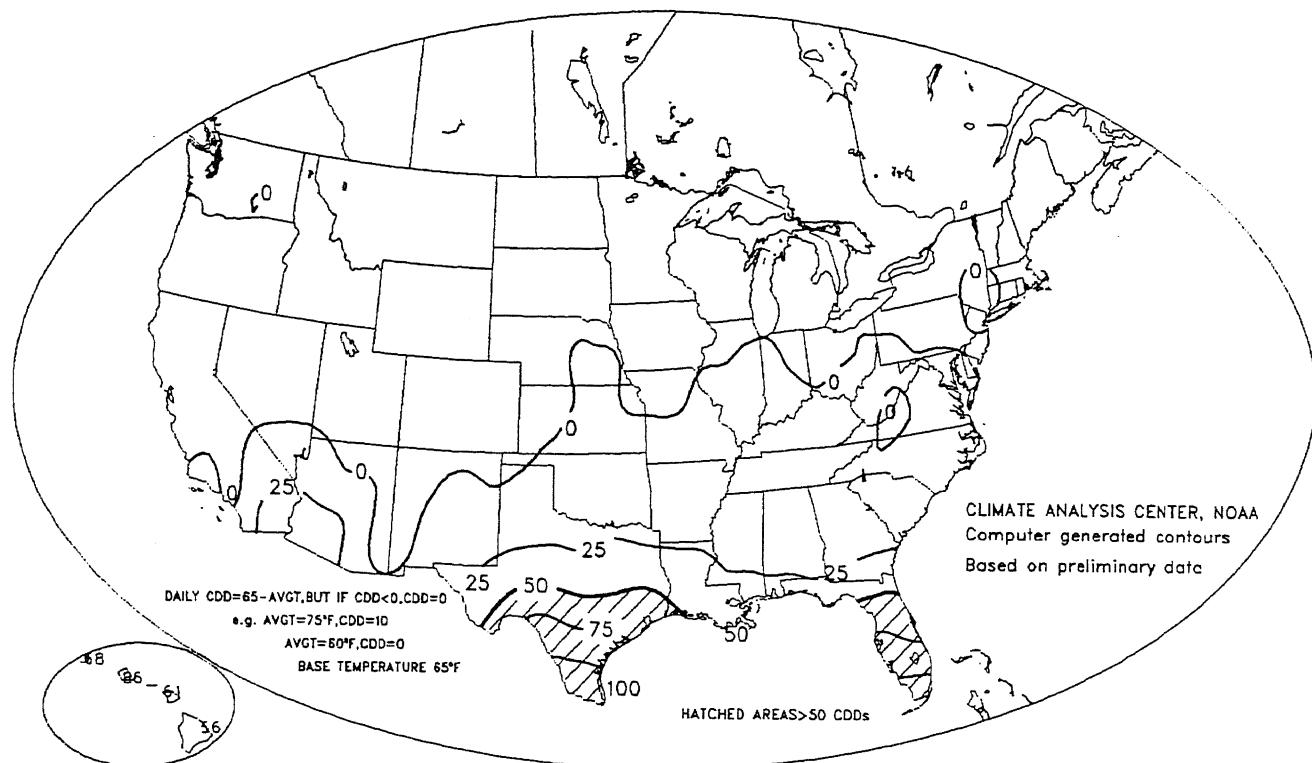
WEEKLY DEPARTURE FROM NORMAL HDD

April 21 – 27, 1991



WEEKLY TOTAL COOLING DEGREE DAYS

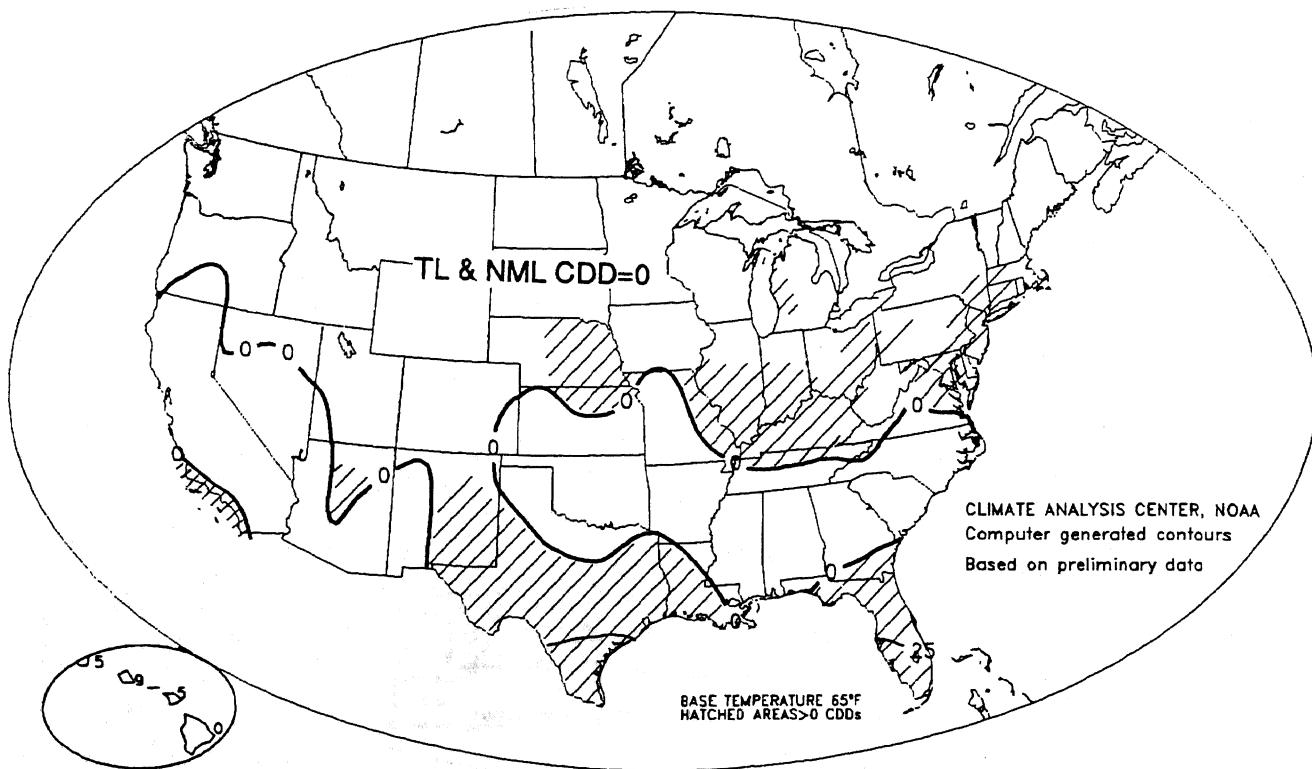
April 21 - 27, 1991



Cooling demand during the week was normally light across much of the nation, with moderate usage (> 50 CDD's) in southern Texas and much of Florida (top). Significant departures (>25) of normal CDD were confined to the extreme southern portions of Texas and Florida (bottom).

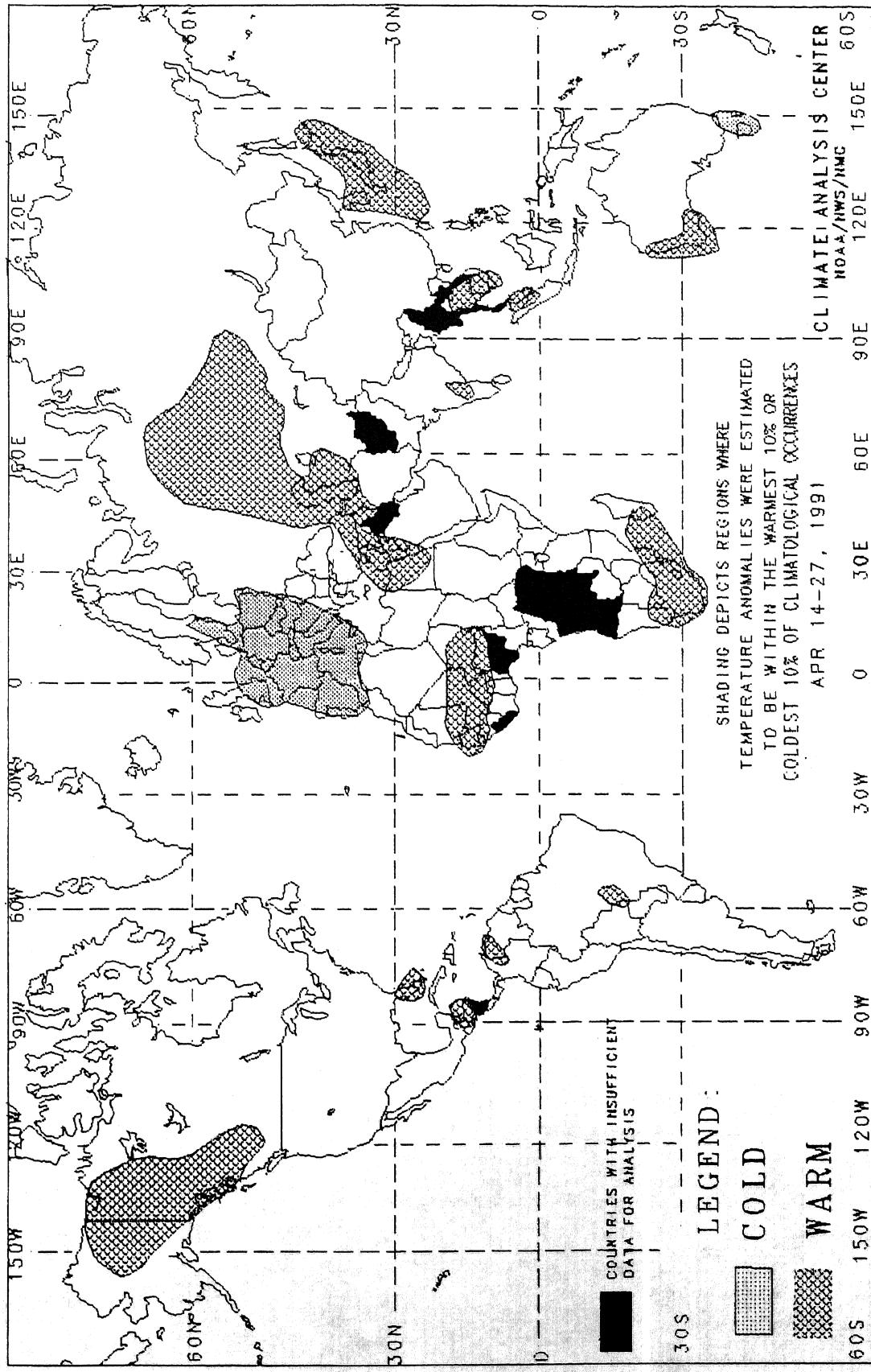
WEEKLY DEPARTURE FROM NORMAL CDD

April 21 - 27, 1991



2-WEEK GLOBAL TEMPERATURE ANOMALIES

APRIL 14 - 27, 1991



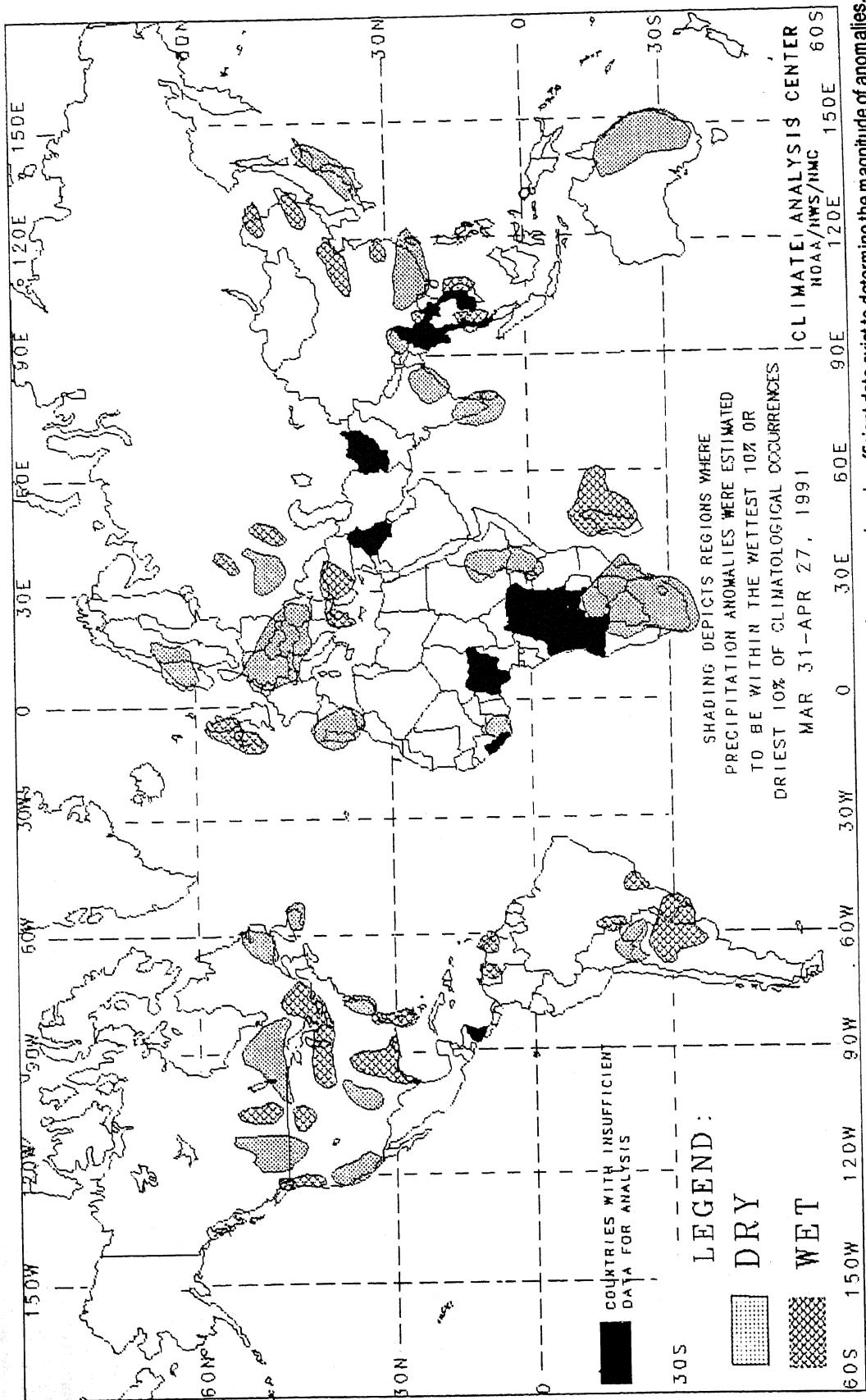
The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty-four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

MARCH 31 - APRIL 27, 1991



The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

SPECIAL CLIMATE SUMMARY

ANALYSIS AND INFORMATION BRANCH,
CLIMATE ANALYSIS CENTER / NMC,
NATIONAL WEATHER SERVICE / NOAA

Additional Information Compiled from Press Reports

SEVERE LATE-SEASON FREEZE AFFECTS MUCH OF EUROPE, DAMAGES FRENCH CROPS

A freakish cold snap gripped much of Europe early last week, sending temperatures below freezing as far south as central Spain, southern Yugoslavia, and the higher elevations of western Greece. Readings dropped below -10°C across the higher elevations of central Europe, northwestern Yugoslavia, and western Bulgaria while temperatures of -5°C and lower were fairly common throughout interior Europe, especially in central and eastern sections (see figure below).

According to press reports, France, and particularly French vineyards, were most adversely affected by the freeze despite the fact that lower readings were more common farther east. An equally unseasonable warm spell preceded the cold snap, allowing many vines to sprout grapes early and thereby rendering them extremely vulnerable. The Bordeaux region appears to have been hardest hit, with possibly 80% to 100% of the young crop ruined. Approximately one-third of the Champagne grapes may have been lost; however, much of the Rhone Valley growing region was spared. In addition to vineyard losses, much of France's peach, pear, and nectarine crops have probably been damaged.

